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University Veterinary Education

BY

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With the opening of an academic year coinciding with a new financial quinquennium for the universities, it seems topical to consider the changes brought about in veterinary education since the 1948 Act. We are indebted to a distinguished teacher for the following article.

Introduction

THE Loveday reports on veterinary education of 1938 and 1944 recommended that veterinary schools should be within universities and veterinary degrees should be registrable qualifications, but that the Royal College of Veterinary Surgeons should remain responsible for maintaining a minimum standard of training. Only in this way, it was stated, could the national need for veterinary surgeons be met and the profession develop as it deserved. All veterinary schools should have field stations with adequately equipped hospitals for large animals. Students should obtain experience on farms and with veterinary surgeons in practice. Bursaries should be available for veterinary training of suitable boys and girls and there should be graduate scholarships so that outstanding students could work for higher degrees. Proper financial provision should be made for veterinary education by Government grants and there should be an enquiry into unqualified practice.

As it is now 13 years since the second Report was published it is perhaps opportune to see to what extent the recommendations have been adopted. For those engaged in veterinary education this article may say nothing they do not know already, but for those who are not in the educational field and who qualified before the Veterinary Surgeons Act of 1948 an account of some of the events of the last 10 years or so may be of interest. Overseas readers may also be interested to see how the new experiment, involving abandoning the one-portal system of entry to the profession, is progressing. It is too early yet to see the long-term effects of the change, but the more immediate consequences are clearly evident.

The Veterinary Register

Until 1950 the sole method of entry to the Register, apart from admission into the special Commonwealth and Colonial List, was by a series of examinations conducted twice a year by the external examiners of the Royal College of Veterinary Surgeons at the various affiliated veterinary schools. Courses of study followed closely the curriculum published in the Veterinary Register. After passing the final examinations and paying the prescribed fee the successful student was awarded the Diploma of Membership of the R.C.V.S., and was entitled to use the letters " M.R.C.V.S." and the title " Veterinary Surgeon."

In July, 1950, as a result of the Veterinary Surgeons Act, 1948, there came a momentous change. On July 7th of that year the B.V.Sc. degree of the University of Liverpool became a registrable qualification, entitling those on whom it was conferred after that date to entry to the Register of Veterinary Surgeons on application and payment of the prescribed fee. Future veterinary graduates would thus enjoy all the privileges of veterinary surgeons without having taken the examinations conducted by the R.C.V.S. The " one-portal " system had gone and a " multi-portal " system had taken its place.

Last year 99 veterinary surgeons came on to the Register by virtue of the conferment on them of registrable degrees and 140 by passing the final M.R.C.V.S. examinations. By 1960 the whole of the profession's annual intake of some 250 will, save for the few who take the diploma under the provisions of Bye-law 95, qualify through registrable degrees.

Registrable Degrees

Since 1950 the veterinary degrees of Bristol, Glasgow, London, Edinburgh, and Cambridge have successively been recognised as registrable veterinary degrees, the possession of which entitle the holders to be registered as veterinary surgeons and to be members of the Royal College of Veterinary Surgeons (M.R.C.V.S.). The Royal College has, however, the duty to visit universities which confer registrable degrees and to report to the Privy Council if it considers that the courses of study and examinations do not justify the continuance of the Order making them registrable. Veterinary degrees are required to be such as to " guarantee that the holders will have acquired the knowledge and skill needed for the efficient practice of veterinary surgery " and the Order in Council making the degrees registrable may be revoked or suspended if they do not meet the requirements of the Veterinary Surgeons Act, 1948. The R.C.V.S. is thus still able—and indeed it is by statute obliged—to exert a powerful influence on veterinary education.

The veterinary degree courses are mostly of 5 years' duration, the longest being 6. They comprise the B.V.Sc. degree courses at Liverpool and Bristol, the Vet.M.B. at Cambridge, the B.Vet.Med. at London, the B.V.M.S. at Edinburgh and Glasgow, and the M.V.B. courses at the National University of Ireland and at Trinity College, Dublin.

Education in a University

In recent years there has been much talk within and outside university circles concerning a " broad " education which will better equip a man or woman for to-day's world than a course of study confined entirely to either arts or sciences. On the one hand, the scientist may be ill-equipped to meet his social duties, to understand his fellow men, and to make wise judgments if he is ignorant of the arts and social sciences. Conversely, the man who has studied only arts subjects at school and university may be ill-equipped to understand much that is happening in a scientific age, and to make judgments which relate to such matters, for instance, as the development and uses of atomic energy. A case has cerainly been made for a reasonable standard in both arts and science, not only up to school leaving age but also in the university. The combined course in arts and science which has been running for some 7 years at the University College of North Staffordshire, and the recent proposal for a combined tripos course at Cambridge are moves in this direction. At school level there is the General Studies paper developed by the Northern Universities Joint Matriculation Board. Such a paper, if it becomes established as a G.C.E. Advanced one, could with advantage be taken along with two science subjects, such as Chemistry and Biology, by boys and girls intending to read science at a university. It would counteract the present tendency to spend the last 2 years at school doing nothing but science, and it would help to encourage that broad general education to which we pay lip service but which we so often discourage by offering a premium to those who have passes in Physics, Chemistry, Botany, and Zoology, but have studied no other subjects since the age of 15 or 16.

To give a broad education through a combined arts and science course to fit a man for an administrative post is quite different from training him for a profession like medicine or veterinary science, in which there is an essential minimum standard of technical competence without which registration cannot be given. The public has to be protected from the inadequately trained but ostensibly qualified doctor or veterinary surgeon. The newly qualified doctor does his pre-registration year to gain practical experience, while the veterinary student sees practice on the farm, in hospital, and in general practice before he takes his final examination. So much instruction has to be given that there is a tendency for this to make up the whole of veterinary education. Universities do provide, however, abundant opportunities for veterinary students to meet students in other faculties, to attend lectures (including extra-mural ones) in various fields, and to engage in social activities with men and women from a wide range of academic disciplines. There can be no " combined " course of arts and science for veterinary students; but boys and girls can be encouraged to make the best use of their education at school by keeping up at least one arts subject, such as history, geography, or a language through the sixth form, or by taking the General Paper when this is available. Veterinary schools must make it possible for such persons to enter without hindrance by adjusting suitably their entrance requirements. For those who stay longer at school and do science subjects to the level of the first year in the university there may be exemption from the first year, as at Bristol, but here again there should be a good general education until the age at least of 18. This extension at school of general education may encourage veterinary students in their first year to take an interest in non-scientific activities in the university, whereas if they have done nothing but science since they were 15 they will probably see university academic life in terms solely of physics, chemistry, and biology.

The veterinary course, like the medical one, is much overloaded. When it was lengthened in 1932 from 4 years to 5 it was hoped to lighten it, but new subjects have been inserted and existing ones expanded until the student's time is once again so fully employed that for much of his course, unless he is above average in intelligence as well as in ability to plan his studies, he is forced to confine his out-of-study time to an orbit which includes little else besides veterinary activities. If he does not live in a university hostel and returns home or to lodgings each afternoon he may get little from his university which he could not obtain from a non-university veterinary school.

This is a serious matter, for much of the enhanced prestige of the profession in recent years has resulted from the wider horizons opened up by veterinarians and the opportunities they have taken to enter into the activities of other sciences, particularly medicine

and agriculture. One of the faults of the veterinary colleges was the isolation of students and staff, especially the latter, from other academic groups. University veterinary education has done much to remove this isolation. More non-veterinarians are finding out what veterinary science is, what its standards are, and what sort of people practise it. The standing of veterinary staff and students in universities is high. In the basic science courses, where they are in direct competition with medical, dental, and general science students, they are on an average at least as good. If the staff of veterinary schools play a full part in the life of their universities they find membership of the university fellowship a valuable experience. If students are to profit as much as staff from the university they must not be so overburdened with classes in veterinary subjects that they have no time to study privately, to use libraries, and to meet students of other disciplines. They need to be encouraged to take an interest in non-veterinary subjects and societies so that they become full members of that fellowship which is the essence of a university.

The Veterinary Schools

The present veterinary schools are located administratively within the faculties of science or medicine, except at Liverpool, where the school is a separate Faculty of Veterinary Science.

Whereas one school still teaches all the subjects of the curriculum, including first-year science, at another school veterinary students enter after spending 3 years in the university reading Natural Sciences. Other schools arrange for first-year science to be done along with medical and dental students within the university departments of chemistry, physics, botany, and zoology. During this year the student may also do some anatomy and animal management. In the second year physiology and biochemistry may still be taught within the university departments, often with the help of veterinary lecturers, and this system may extend into general pathology and bacteriology in the third and fourth years, but with purely veterinary subjects such as animal husbandry taught at the same time. The amount and timing of the contribution to the veterinary course made by university non-veterinary departments varies much from one university to another. In one school, for instance, all pathology and bacteriology teaching is in the department of veterinary pathology, and parasitology is taught in a School of Tropical Medicine. In another school pathology and bacteriology are taught by medical departments, and veterinary teaching in the subjects is done in the last 4 terms of the veterinary course. Each school is experimenting with its methods and each is entirely free to introduce such changes as seem likely to be of value.

Whether the veterinary school functions as a relatively isolated college with considerable autonomy, although actually within a university faculty, or whether it depends for much of its teaching on university non-veterinary departments, the standard of the school depends mainly on its veterinary staff, because the non-veterinary staff who assist it in the early years are only too willing to adapt their teaching to the needs of veterinary education. The universities were given responsibility for veterinary education following the 2 Loveday reports because they were considered capable of giving to veterinary schools facilities for teaching and research which the independent veterinary colleges could not give. The universities desire to maintain and improve standards, and they are prepared to be advised by the veterinarians they appoint to their staff and by the external advisers whom they consult from time to time. There need be no fear that the standards of veterinary education will be lowered; they are certainly no lower than in 1950. There has been great expansion of staff. The new schools at Bristol and Cambridge, for example, have some 70 staff between them, more than twice as many as the total full-time staff of all 5 veterinary colleges in Great Britain and Eire half a century ago. A very fair share of the recurrent and non-recurrent grants received by universities from the University Grants Committee has been devoted to the veterinary schools. The success of each school depends on the staff, for it is they who set the standards of the course and examinations, and it is they who attract undergraduate and post-graduate students and establish the reputation of the school both inside the university and outside it. The new schools have established a fine record: starting with nothing and with no tradition on which to build, they have quickly established a fellowship of staff and students and a reputation which is certainly not inferior to that of the old-established veterinary colleges.

Material facilities have also greatly improved with the provision of new teaching and research accommodation and equipment and the construction of veterinary hospitals, field stations, and hostels. Much more attention than formerly is paid to farm animals. Poultry receive special attention, and the hospitals house horses, cattle, sheep, and pigs. Practical instruction is given in veterinary hospitals and practices, on farms, and in general practice during vacations. For the last, the profession acknowledges the very great help which members in practice provide each year by taking students with them and teaching them much of the practical side of their work.

The restriction on unqualified practice produced a change in the activities of students for they can no longer act as *locum tenens* for veterinary surgeons during vacations, since they may not diagnose or treat disease in animals. Before 1948 a student might earn money in this way to help to pay for his next term's expenses. To-day the hard-up student may work on a building site or in a factory for a few weeks to save what he needs to supplement his other income for the next term. It is undesirable that such employment should extend beyond a few weeks each year, since "seeing practice" remains an essential part of veterinary training.

Veterinary schools see that veterinary students obtain first-hand experience of agriculture, either by providing such experience on farms attached to Veterinary Field Stations or by requiring students to

spend 3 to 6 months in approved farm work during the vacations of their second and third years. Applicants for admission to schools who cannot obtain entry for a few months may also be advised to obtain experience on farms while they are waiting.

All the schools also see that students gain sufficient practical experience of farm veterinary practice, usually by requiring them to spend 3 or 6 months seeing such practice during their last 2 or 3 years at the university. All the schools also have their own facilities for farm practice, either on farms on which they do the veterinary work, or in a school practice, or on farms belonging to the school. Both the routine day-to-day tasks of the practising veterinarian and the less usual medical and surgical problems are thus met with during the veterinary course.

Field Stations

The first Veterinary Field Station was established at Streatley-on-Thames at the outbreak of the war by the evacuation of the Royal Veterinary College from London. This field station and the college practice at Wallingford have proved excellent features of the course. The Streatley experience was extended and modified at the University of Liverpool Field Station at Leahurst in the Wirral area of Cheshire. Other schools have also developed field stations and the London school is soon to move to its own permanent new station at Potters Bar. The occasional pig, sheep, or cow that was to be seen in veterinary schools in pre-war days has been replaced by herds and flocks in their natural environment and by large numbers of clinical cases sent in to field station hospitals by veterinary surgeons. A mixed practice has grown up in some schools, while in others the veterinary work on nearby farms is carried out by the clinical staff of the school assisted by students who reside throughout the whole of their final year in the field station hostel. Each school is working out its own technique for clinical instruction, as for the other parts of the course.

The Veterinary Student

The average age at entry to the veterinary course has risen since before the last war, when men and women usually started their courses at the age of 17 or 18, and qualified at 22 or 23. Before 1932, when the course lasted 4 years, many qualified in their 21st year, and one or two even had to wait until their 21st birthday for their diploma. Since 1945, because of war service and National Service, men did not come to veterinary schools until they were much older, sometimes married and with a young family. It is only in the last 2 or 3 years that a fair proportion of applicants have come once again straight from school. Women applicants are, as before the war, usually 18 or 19 when they apply but because of the long waiting lists they may be a couple of years older before they are admitted. Some applicants may have spent a third year in the sixth form and taken additional subjects at " A " level and also scholarship papers. Some of these may qualify for exemption from the first year if accepted by the Bristol school and thus graduate a year earlier than otherwise.

No students worked harder and achieved a better average standard than the ex-servicemen who filled most of the places in the schools in the immediate post-war years. Many of them did well academically even though they had the responsibilities of wives and children and the residual mental and physical effects of their war service.

Apart from that special group, veterinary students to-day reflect the qualities of university students in general, rather than conforming to any particular type. They expect from life what young people everywhere now expect: they tend to be quieter and less full of pranks than a generation ago, they nearly all receive aid from State or Local Authority, they buy few books and do not dream of buying a microscope or more than an occasional instrument. They like " spoon feeding " in their early years but profit from opportunities to discuss cases and general topics in their later years. They get on well with their teachers, to whom they make a warm and candid approach which makes for good fellowship. They claim to be just as hard up financially as most students were 20 years ago: perhaps they are, judged by to-day's standards of what constitute the " necessities " of life. They take their job seriously and most of them study hard, particularly when they reach the last 1 or 2 years of their courses. They are certainly better fitted for veterinary practice as it is to-day than they would have been if trained under the conditions that existed 20 years ago. By any standards they are as good veterinary surgeons.

Twenty years ago nearly all veterinary students depended on their parents to support them during their veterinary courses. There were only a few scholarship students. Most students had received a good general education in school and at home and had usually had some contacts with animals. To-day most of our students receive Local Authority or State grants which are awarded on the results of the G.C.E. examinations at " A " level. Many applicants for places in veterinary schools have spent all their lives in towns and have had little contact with animals, others have lived in remote rural areas in contact with animals but perhaps have received a very narrow education at school. Some may have lived in a home where a daily picture paper comprised almost all the literature available and may hardly have travelled more than a few miles from their home until they came for interview at the university. The university must thus help to develop their general education and not just their professional one. Not every grammar school student is suited to a university education, and not all veterinary students will make a success of their chosen field. The schools try to select those they think can best profit from what they have to offer. There will inevitably continue to be a proportion of failures in our schools during the course, for there is no certain method of selection. Even if we were able to select accurately for ability to pass examinations, we yet might choose people otherwise unsuitable for membership of the profession. Whether they are successful or not we cannot really know for many years. And what do we mean by success? Owning a large practice, attaining a senior

salaried post, or just trying one's best to do well a job thought to be well worth doing? The most that selection seems able to do is to reject some of the least suitable candidates, although of course some of the rejects might have been brilliant had they only been accepted. The university has also the task of weeding out as early in the course as possible those who are unable to make the grade. It is important to do this quickly, at the end of the first or second year, so that students do not waste too much time before transferring to a course of training better suited to their ability.

Mixing with other university students in the first and subsequent years has advantages. Unfortunately, veterinary, medical, and dental students together form a very large group, who have to acquire a rather elementary knowledge of 4 science subjects in a short time and so may be relegated to single lecturers, rather than being able to profit from the wider teaching of those reading science in the university. Veterinary students also tend to become segregated in their social university life—joining only veterinary societies, sharing lodgings with other veterinary students, and often failing to take full advantage of what the university can offer. Hostels help to give these wider contacts; not the field station hostel, which is solely veterinary, but the university hostel if it is available in the first and second years of study. Unfortunately, for lack of funds, hostels are in short supply in all our universities to-day. They are one of our most urgent needs.

Post-graduate Veterinary Education

Many more veterinary surgeons embark on further study after qualifying than was the case 20 years ago. There are a wide range of higher degrees such as M.V.Sc., D.V.Sc., D.V.M., M.V.S., and Ph.D., and also the Diplomas D.T.V.M., F.R.C.V.S., and D.V.S.M. Before the last war only a small proportion of veterinary students took university degree courses. In London and Edinburgh, some students took the B.Sc. (Vet.) and this allowed them to proceed later to the Ph.D. and the D.Sc. In Liverpool, a university veterinary school from its establishment in 1904, students started with M.R.C.V.S. and B.V.Sc. courses but a number of them relinquished the degree course before the end and finally qualified with the Diploma alone. The position has now completely changed. Soon all veterinary students in all the schools in the British Isles and Eire will enter the profession by the award of registrable university degrees. This will mean that they will all be eligible to study for a higher degree. Some take a science degree during their veterinary course, or by intercalating an extra year or two of study. Thus the veterinary student in Cambridge obtains his B.A. after 3 years, in Trinity College, Dublin, after 4: these are additional to the registrable university veterinary degrees.

To allow graduates to take higher qualifications there are now more grants and scholarships than formerly, including Agricultural Research Council and Animal Health Trust grants, University Post-graduate Scholarships, and a number of other awards for which veterinarians are eligible together with graduates in science and medicine.

Professional Responsibilities

Ours is a small profession. Each year's entry of some 250 graduates represents about 4 per cent. of our numbers. Although the first task of veterinary education must be to produce veterinary surgeons trained to practise veterinary medicine and surgery, it is hoped that the veterinary schools may do something more than that, for if our small profession is to continue to advance it must contain a good proportion of men of vision, wisdom, and good sense, who are prepared to play their part in leading the profession along the path of progress. Such men are largely born, not made, but a good education can assist their development to full stature. Part of this education comes from their childhood at home and at school, some from their professional training, and the final phase in the years after they have entered the profession. Veterinary education can help by trying to select for training on a basis of character and culture as well as mere school examination marks, by encouraging students to take a full part in university life, by providing education as well as instruction (tutorials, discussions, general reading, in addition to formal lectures), and by explaining the nature and aims of the profession and the high standard expected of its members in their relations with the public and with one another.

In these days of full employment, with offers of good posts to students even before they take their examinations, they may be tempted to think of the profession solely as a way of earning a living. But there are duties as well as rights to be respected by professional men. There may be hard times ahead, even if they are but temporary, and a professional man should have standards of practice and conduct which can be maintained through good times and ill alike. His work should give him enjoyment and satisfaction, he should have a sense of professional unity with his fellows, and he should have a high standard of profession skill and personal integrity.

A profession is given privileges by Parliament as a measure of the trust which the public places in it. The privilege of the eventual exclusive right to practise veterinary surgery was not given for the profession's benefit, but because it was considered that the public ought to be protected by having veterinary surgery practised on their animals only by properly trained persons. Until 1948 the public itself was left to choose between qualified and unqualified, the Veterinary Surgeons Act of 1881 serving merely to let the public see clearly which was which. We must do all we can to merit the trust which is placed in us. Service to the public, rather than to ourselves, should be our object, although in serving the public we also serve ourselves.

Discussion

Although the academic freedom of the universities allows them to experiment with the veterinary courses of study, and with examinations, including the pro-

cedure for admission, length of course, nature and scope of subjects, and standard of examinations, they must see that all who obtain registrable degrees are fitted for the efficient practice of veterinary surgery. Admission to the Veterinary Register must not be extended to those who, no matter how well trained in research or how well educated in the sciences and humanities, are not fitted to *practise* veterinary medicine and surgery. The Veterinary Surgeons Act, 1948, by prohibiting veterinary practice by unqualified persons, is designed to ensure that animal disease is diagnosed and treated only by properly trained practitioners. All whose names are on the Register are thus assumed to be capable of efficient veterinary practice, no matter whether they in fact engage in it or not. Even if they never diagnose or treat animal disease from the day they are admitted to the Register, their admission must nevertheless be conditional on their being capable of doing so. There is thus no place for conferring a registrable veterinary degree on a person who has not achieved the required minimum standard of practical skill.

Apart from registrable veterinary degrees, the R.C.V.S. will continue, at least for some years, to examine for admission to the Register graduates of overseas veterinary colleges to whom it may grant exemption from certain of the M.R.C.V.S. Diploma examinations. Every year a number of veterinary graduates from India, Pakistan, and other countries study veterinary science in one of the British veterinary schools and sit for examinations of the R.C.V.S. under the provisions of Bye-law 95. Ability to *practise* veterinary medicine and surgery is the criterion here, too, as with the registrable degrees.

How is the university system working? How do the results compare with those of the old one-portal system of external examinations? How much variation is introduced from one school to another? How do the facilities at different schools compare, both for giving vocational or technical *instruction* in veterinary science and for *educating* young men and women for a profession? How does the quality of the entrants and of the graduates compare with what it was before the last war? Are standards being maintained? What makes a good veterinary surgeon and how can we recognise the potential good student at entry, educate him and train him for his profession, and ensure that he does his work creditably?

It would be surprising if we were able to answer all these questions. To some there may be no single answer, but as many answers as there are questioners. This article summarises some of the happenings of the recent years so that readers may judge for themselves how things are developing. Conditions to-day are so different in the veterinary schools from what they were in the 1920's and even in the 1930's that it is well that we should take stock of to-day's environment before judging the young graduate. For instance, the competition for places in veterinary schools has until quite recently been so keen that rigid selection for the available places has been imperative, and the standard of attainment in the G.C.E. examination at " O " and " A " level demanded for entry to the veterinary course was very high. Furthermore, university progress committees are firm in their decisions to debar from further study any who fail after 2 or 3 attempts to pass any of the major examinations. With long waiting lists, students largely supported by Local Authority or State funds, and universities depending mainly on Treasury grants for their existence, there can be little justification for leaving places in the schools occupied by people who have shown themselves unable or unwilling to profit from a combined academic and vocational discipline which demands considerable intellectual ability.

Nowadays, few veterinary students remain at a veterinary school for more than about 7 years to take the normal 5 years' course. There are many casualties on the way, caused by illness, decision to take up some other course of training, or refusal by the university to continue to offer further education. Thus at one university a survey of students entering the veterinary school in the 3 years 1947, 1948, and 1949 showed that of 92 who started the course, 42 graduated after the minimum period of 5 years, 26 after 6 years, and 5 after 7 or 8 years. A total of 19 abandoned the course, 13 of them within 3 years of starting.

This is quite different from the position between the wars, when almost everyone who started the veterinary course succeeded eventually in qualifying, even if it meant changing colleges in the process and taking 10 years or more to pass the final examination.

Conclusions

This survey illustrates some of the changes which have resulted from the transfer of veterinary education to universities and from its development to meet the changing needs of current veterinary practice. The changes have caused no obvious setback in veterinary education; they have brought about some improvements. A great expansion of education has occurred since the war and veterinary education has had its proper share. It is doubtful if this would have been so if it had remained the function of independent veterinary colleges. The courses at different veterinary schools vary considerably in their duration, pattern, and content, but all of them are designed to produce competent practitioners of veterinary medicine and surgery. They hope also to succeed in producing men and women of education and character.

Opinions on veterinary education differ widely among members of the profession, even among members of the same generation. Perhaps this article will stimulate discussion among those who are interested—and that should be everyone—and result in the standard being maintained and improved. No one would claim that present standards cannot be raised or existing methods of training improved. Those engaged in any form of education are never satisfied with their efforts, for their aim is always to go forward.

I end with a quotation from an article by John W. Gardner in the Annual Report for 1956-7 of the Carnegie Corporation of New York, because it expresses so well the university idea of education.

" Another consideration which should be much in

the minds of all who are seriously concerned with the future of higher education is the importance of turning out liberally educated men and women. As we have emphasised, individuals of high ability and advanced training are going to perform all of the highly specialised and technical rôles in the society, all of the scholarly, scientific, and professional rôles; in short, they are going to manage the society. Whether as top business executives, government administrators, professional men, teachers, technological experts, or scientists, they are going to have the guiding rôle in shaping our future. This means that our colleges and universities must produce not only specialists, but men with wisdom and breadth and a sense of values commensurate with their destined rôles of leadership. Intelligence untempered by wisdom, competence unguided by a sense of values —these could be our downfall as surely as ignorance and incompetence. In short, we must turn out men whose technical skills are matched by their breadth of comprehension, by their grasp of their own heritage, by largeness, and liberality of mind.

" In the years ahead, the able youngster is going to receive very special attention. He is going to have lavish facilities placed at his disposal for the development of whatever gifts he may have. Such treatment entails deep obligations. If we do not give them an abiding sense of responsibility to the society which has dealt with them so generously, we shall have done an injustice both to them and to the nation.

" It cannot be said too often that more college degrees may not necessarily bring any increment in virtue or wisdom. Whether we shall have a steady flow into our leadership ranks of wise, liberally educated men and women with the creativity and the sense of values which the future demands, or whether we shall have a paralysing flow of skilled opportunists, timeservers, and educated fools, depends wholly upon the sense of values which guides our efforts."

FIFTY YEARS AGO

Occasionally, even in these days, individual members of the profession complain of the annual registration fee payable to the Royal College of Veterinary Surgeons. Fifty years ago, when the idea of an annual fee was being discussed, it met with a mixed reception, to say the least. One misanthrope wrote to THE RECORD as follows:—

Three weeks ago you published the remarks of two presidents of veterinary societies about the abovenamed project, with an Editorial comment distinctly favourable to the same. The dearth of subsequent correspondence is a striking illustration of the real attitude of veterinary surgeons, who collectively profess to be an educated and public spirited (good heavens!!) body of men.

These pretensions become rather ridiculous when we consider the reception which Major Butler's really well thought out and feasible scheme has met with from the profession. It would be advisable for reformers of the Butler and McKinna type to seriously consider the material with which they have to deal. The one thing which the average veterinary surgeon considers most important, when considering any prospective reform for the profession, is—that it must cost him nothing. If it does, he must be assured of a proportionate return for his outlay. As for the progress or the benefit, of the profession as a whole, that is nothing to the individual practitioner, compared with the importance of avoiding the disbursement of half a guinea from his own pocket.

In the numerous comments upon Major Butler's proposal which have appeared in print, nothing is more noticeable than the constant and dogmatic insistence on the fact (is it really a fact?) that payment of a registration fee " cannot be made retrospective." It is true that one member, who ought to have known better, gave a half-hearted approval to the scheme " if the subscription did not exceed 5s. or 10s. per annum"—but it is easy to see the general view of the profession. Broadly speaking, veterinary surgeons care nothing about the political and scientific progress of their profession, which this scheme might do so much to advance—their sole concern is for their individual pockets.

My object in calling attention to this wholly selfish attitude of the profession is to ask if some bait cannot be found to tempt the average veterinary surgeon to subscribe his half-guinea, or even guinea.

The advocates of a registration fee—probably overrating the mental and moral status of the profession—have, so far, been singularly unfortunate in their choice of such. Was it not Mr. McKinna who proposed that each member paying 10s. 6d. should receive a copy of the Register? The average veterinary surgeon cares nothing about the Register, and too often—as Mr. McKinna must know—lets his name drop out of it. Major Butler, I believe, was still more unhappy in his selection of a lure. Did he not talk of founding scholarships, and did he not mention histology in this connexion? The average veterinary surgeon cares nothing about histology—and knows nothing about it, although he calls himself a scientific man. Major Butler and his supporters strike me as lacking in " the wisdom of the serpent "—they have not appealed, as they should have done, to the individual greed of their audience. Could not some wily member devise a plan by which the average veterinary surgeon might be asked to subscribe with some possibility of a future benefit to himself? He will never subscribe without it.

" DIOGENES."

And yet, with the passage of time, the annual fee has become established, " the average veterinary surgeon " *does* care about histology, and he is everywhere accepted (good heavens!! as Diogenes would say) as a scientific man. So is history made.

A Case of Myocardial Fibrosis in a Cow with Accompanying Arrhythmia

BY

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A SHORTHORN cow was examined as a suspected case of reticulitis. The animal was 8½ months pregnant with her third calf. The cow was in good condition, bright in appearance, and showed no typical reaction to the usual tests for foreign body penetration. There was jugular congestion but this was not accompanied by oedema in dewlap or submaxillary space. Pulse rate averaged 84 per minute and temperature was 102°F. Auscultation of the heart revealed arrhythmia with missed beats and the irregular occurrence of duplicated second sounds. The sounds were quite audible and no adventitious sounds were detected. Pericardial puncture produced no fluid.

An electrocardiogram was taken and the changes are shown in Fig. 1a. The cow had received no medicinal treatment prior to this tracing being taken.

After parturition, at which a normal bull calf was produced, the jugular became visibly corded and slight oedema developed in the brisket but appetite and condition were maintained.

Examination 3 weeks later revealed slight oedema in the brisket but none in the intermaxillary space. Both jugulars were visibly and palpably engorged. Pulse rate was 72. The previously noted cardiac irregularity had disappeared but auscultation revealed duplication of the second heart sound. No medicinal treatment had been given. Friction sounds were audible in the lower part of the chest, synchronous with the respirations. A blood sample collected at this time showed (per cu. mm.):—

Neutrophils:	1,904	Monocytes:	680
Lymphocytes:	3,808	Eosinophils:	408

There was thus no evidence of an active pyogenic infection. Clinically there was no sign of anaemia.

An electrocardiogram confirmed that the previous abnormality had disappeared and a normal and regular cardiac cycle established (Fig. 1b).

The cow was destroyed and *post-mortem* examination showed no evidence of foreign body reticulitis and the abdominal viscera were normal. In the thorax there were slight recent pleural adhesions both to the thoracic wall and to the diaphragm. The lung substance was normal. There was no pericarditis. The wall of the left ventricle was less firm than normal with a patchy fibrous appearance on the surface. The inner aspect of the left ventricular wall was even more irregular and in one central and apical area the muscle tissue was replaced by white fibrous tissue. There was no valvular endocarditis and the right ventricle and both atria were normal.

The Electrocardiogram

The tracings show evidence of ectopic beats of ventricular origin.

Lewis (1949) states that the normal QRST complex is only seen when the systole to which it corresponds is produced by an impulse arising above the division of the A.V. bundle and which travels down the normal channels over the ventricles. Thus a QRST complex of abnormal form is seen if the impulse is generated by a focus in the ventricular wall; or if being nodal in origin there is failure in conduction in part of the conducting system.

In these tracings (Fig. 1a) the $Q^2R^2S^2T^2$ complex is bizarre as compared with the dominant beats and in all the leads the T wave becomes erect instead of inverted. Because the $Q^2R^2S^2T^2$ is abnormal as compared to the dominant beats the premature systole is considered to have arisen in the ventricles and not at the A.V. node.

The ventricular extrasystoles, whether occurring singly or in groups, are followed by a full compensatory pause. This is usual for premature systoles of ventricular origin as the sinus node is generally not discharged prematurely and its rhythm remains undisturbed.

The similarity in the form of the $Q^2R^2S^2T^2$ complex suggests a single ectopic focus in the ventricles.

Discussion

Cardiac arrhythmias may arise from one of three causes, namely:—

(1) due to irregularities in the pacemaker (S.A. node);

(2) due to an ectopic focus producing impulses;

(3) owing to conduction defects interfering with spread of the impulse in the heart muscle.

In man, Katz (1946) states that premature systoles are the most common and most benign of the active ectopic rhythms. Whilst they are common in organic heart disease their presence is not definite evidence of cardiac disease. Only when they are very frequent or occur in the form of persistent regular rhythm, often in twos or threes is the prognosis unfavourable. In animals, Hutyra *et al.* (1949) state that cardiac intermittence is rare except in horses and dogs.

That normal cardiac impulse conduction can be re-established is indicated by the second series of tracings (Fig. 1b) taken 3 weeks later. These show normal complexes, regular rhythm and no extrasystoles. The fibrosis in the heart muscle found at autopsy presumably represented the recovery stage of lesions which previously provided the foci necessary to induce ventricular ectopic beats. On *post-mortem* there was no evidence of hepatic or renal changes sufficient to account for the circulatory impairment, and whilst there was no gross pulmonary oedema it is highly likely that the jugular engorgement and slight oedema in the brisket developed as

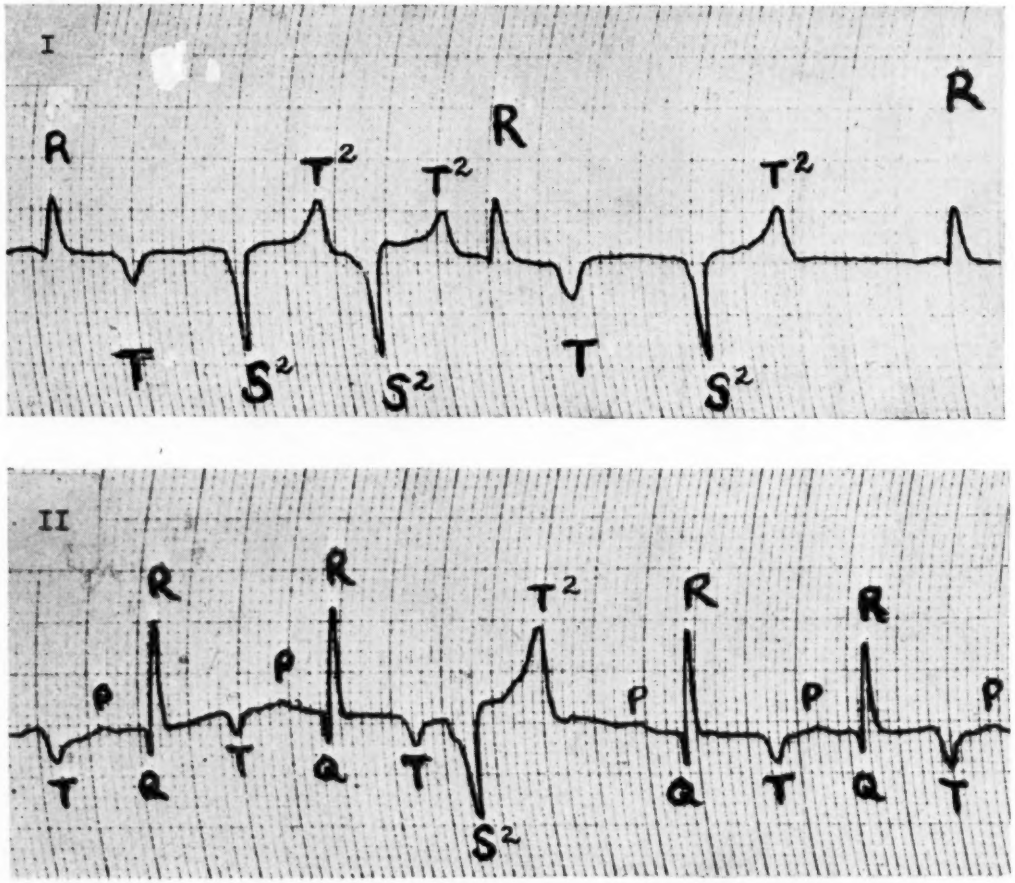


FIG. 1 (a)

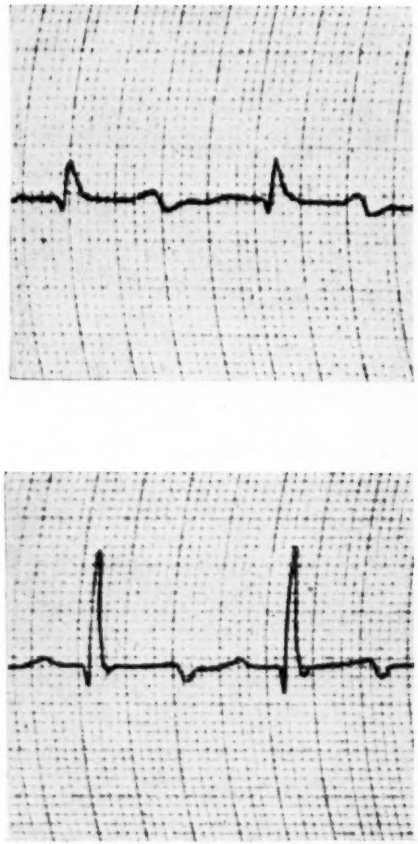
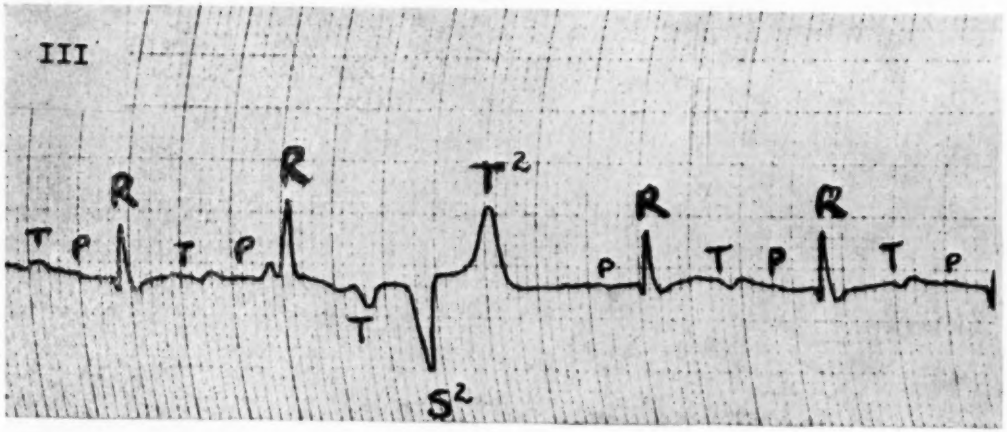
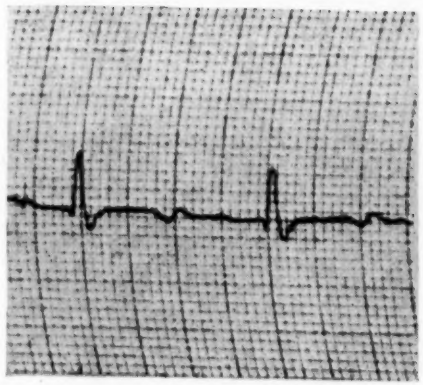
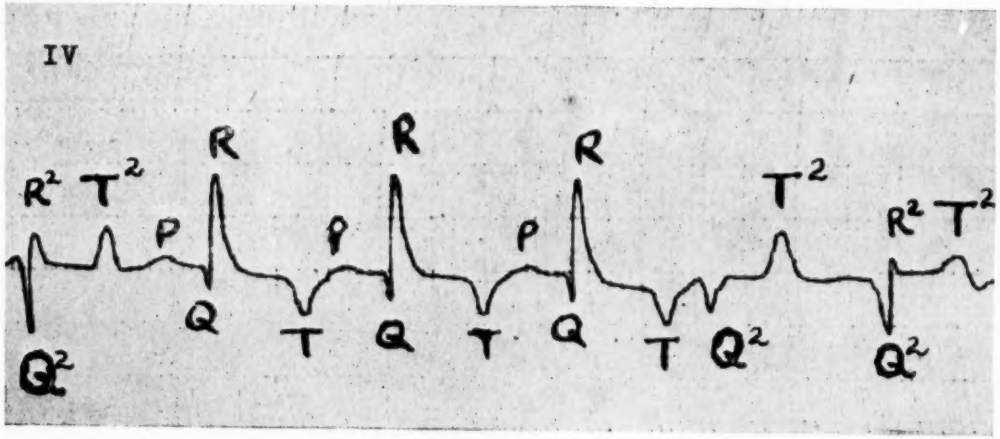


FIG. 1 (b)







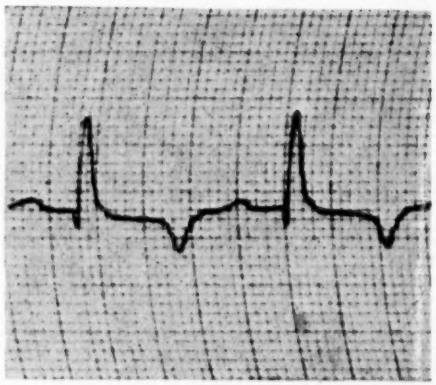


FIG. 1 (a)

Electrocardiogram recorded (a) June 28th and (b) July 20th. Electrodes placed as follows:—

Lead I: R.F.—L.F.
Lead II: R.F.—L.H.
Lead III: L.H.—L.F.
Lead IV: Chest—R.F.

FIG. 1 (b)

The chest electrode was placed in the fourth intercostal space (left side) just below the point of the elbow.

(a) Shows ventricular premature systoles marked $Q^2R^2S^2T^2$ obviously differing from normal.

In (b) no premature systoles were noted.

the result of the fibrosis in the ventricular wall interfering with the efficiency of the heart as a pump.

If this assumption is true the absence of pulmonary oedema is difficult to explain. It is noteworthy, however, that during the past 3 years 6 cattle have been examined with exudative pericarditis. These all showed jugular cording and marked oedema in the brisket but there was no marked pulmonary oedema. It must also be noted that the cow which is the subject of this paper was not *in extremis* when slaughtered and it is therefore possible that pulmonary congestion and oedema would have developed later.

Lewis (1949) observes that premature systoles result in the grouping of heart sounds in threes and fours depending on whether the premature contraction is able to raise the aortic valves or not. This corresponds with the clinical observations.

The reason for the fibrosis in the heart muscle remains unexplained. The case might therefore be described as one of fibrosis of the heart muscle associated initially with ventricular extrasystoles but later with restoration of normal heart rhythm, but with permanent impairment of cardiac efficiency. Whilst in human medicine extrasystoles are not uncommon and often of little clinical significance there is very little information in the veterinary literature on the incidence or significance of these ectopic rhythms.

Acknowledgments.—I wish to record my special thanks to Dr. John Cosh of the Department of Medicine, Bristol Royal Infirmary, for helpful criticism in the preparation of this paper.

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In Brief

RUBARTH'S DISEASE "H.C.C."

Since the disease was first described by Rubarth (1947) in Sweden, it has been reported from several other parts of the world. In 1948 it was found in Switzerland (Saxer, 1948) and the U.S.A. (Coffin, 1948), in 1949 in Great Britain (Innes, 1949), Australia (Whittem, 1949) and Belgium (Florent, 1949), in 1950 in France (Goret *et al.*, 1950) and Italy (Nardelli, 1950), in 1951 in Canada (Smith, 1951), in 1952 in Brazil (Ferri, 1952), Holland (Akker, 1952), Germany (Cohrs, 1952) and Morocco (Martin *et al.*, 1952), in 1953 in Japan (Fujimots *et al*, 1953), in 1954 in Hungary (Kapp, 1954), in 1955 in Russia (Chernyak *et al.*, 1955), in 1956 in Denmark (Krabbe & Müller, 1956) and in 1957 from Indonesia (Ressang, 1957).

Various laboratory methods have been employed to assist in confirming the clinical diagnosis. The typical cases, terminating fatally, are recognisable on clinical grounds alone, but laboratory tests are necessary where the disease is less severe.

A complement-fixation test for the differentiation of the disease from the canine distemper complex was reported by Mansi (1955). Smith *et al* (1955) reported the use of the micro technique of the complement-fixation test. The object of these tests is to demonstrate a specific complement-fixation antigen in tissues of infected dogs, or antibodies in the serum of recovering and immune animals.

The presence of a specific diffusable antigen has been reported by Mansi (1957) utilising the plate gel diffusion precipitin test.

The fluorescent antibody technique has been used and results were reported by Coffin *et al* (1953) who were able to demonstrate that the intranuclear inclusions contain high concentrations of viral antigen.

The use of the tissue culture technique has been introduced successfully by Cabasso *et al.* (1954) and further study of the cyto-pathogenic effect of the virus was demonstrated by Thordal-Christensen (1955). The virus was reported to exert a cytopathogenic effect on new-formed cells of the kidney or the testicular tissues of dogs. Inclusion bodies were produced and observations made on the viability of the culture. The growth of the virus could be measured by inoculation into susceptible dogs or foxes, by complement—fixation test or by titration in other tissue cultures.

Fastier (1957) reported the production of a haemagglutinin during growth in tissue culture of this virus. Culture fluids were harvested when cyto-pathogenic changes were at maximum, *i.e.*, in 3 to 4 days. Haemagglutination occurred at *p*H 7·5 to 8·00 but with chick red cells only. The ability to haemagglutinate the cells of the adult fowl was related to the virus content of a tissue culture fluid and not to any property acquired as a result of passage *in vitro*. Haemagglutination was specifically inhibited by H.C.C. immune dog serum.

Treatment has been suggested by Pinckney (1954) by the use of antiserum in combination with chemotherapy and the use of antibiotics to control secondary infections. The use of immune serum was found to be of use only in early uncomplicated cases ; it has also been observed, however, that a great number of the chronic cases would normally recover without any treatment.

The use of combined live hepatitis virus and distemper egg-vaccine together with their immune sera was reported by Mantovani (1954). A similar method for the vaccination of foxes against fox encephalitis with a combination of serum and live virus has, however, proved unsatisfactory (Green *et al.*, 1935) ; Chaddock (1947) delayed infections developing in many cases.

A dual vaccination using H.C.C. live virus by the instillation method (Mansi, 1953) and the instillation or subcutaneous inoculation of avianised distemper has been also reported (Mansi, 1956). A susceptible dog, when vaccinated, shows the eye reaction, oedema of the conjunctiva and *membrana nictitans* of the vaccinated eye, whereas an immune animal does not. An animal in the incubation stage of the disease does not show the eye reaction if vaccinated more than 24 hours after exposure, but develops a serious but not necessarily a

fatal attack. A non-reactor, presumably an immune animal, can be revaccinated without any danger.

Inactivated or killed tissue vaccine has not proved effective for the prevention of fox encephalitis or canine hepatitis, a finding that was reported by Chaddock (1947) and Chaddock & Carlson (1950), and which is now known also to apply to many other virus-vaccines.

The only disadvantage of the use of the live H.C.C. virus is the possibility of infecting in-contact, susceptible dogs and the procedure that should be recommended is the vaccination of all animals on one premises at one and the same time. The method gives a strong immunity and is, therefore, to be recommended in areas where the disease is endemic.

Thordal-Christensen (1957) reviewed the available literature on this subject up to early 1956 in a publication which gives a very useful collection of references that would be of considerable help to any person who is particularly interested in the subject.

Weybridge. W. MANSI, *Oct.*, 1957.

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ABSTRACT

Warble Infestation as an unsolved economic problem. (1956.) PARISH, W. E. *St. Vet. J. Minist. Agric. Lond.* **11.** 1-7.

It is suggested that in a world where food shortages are common the real importance of this problem should not remain overshadowed by the more immediate and spectacular economic losses due to infectious diseases, when in fact the warble fly may cause a greater loss in continental Europe than that due to foot-and-mouth disease. In Great Britain it is responsible for a loss of no less than £1,000,000 annually comprising in addition to loss of hides, spoilt meat, a fall in milk yield, and even unthriftiness—measured in one experiment to be of the order of 0.32 lb. per head per day. In America in 1954, warble fly was estimated to have caused more loss than all other meta and protozoan parasites together, amounting to $100,000,000 annually or 2.8 per cent. of the total loss in cattle production.

In view of this, and the fact that a satisfactory insecticide (derris) has been available since 1922, some concern is expressed at the slow rate of progress in satisfactory control or eradication of this parasite. Methods adopted in various countries are mentioned and attention drawn to the successful introduction in Cyprus in 1939 of specially trained teams of dressers under veterinary supervision. Until this time little success had followed any measures whether voluntary or compulsory. In less than 4 years following the introduction of these teams, Cyprus, which had an initial incidence of 78.4 per cent. of infected cattle, eradicated the fly. Such methods, modified to suit land-locked continental countries, have been applied in several European countries with conspicuous success. Thus the incidence in Holland fell from 25 to 3 per cent. in 4 years; to 1 per cent. in parts of Sweden; from 75 to 23 per cent. in France (using paradichlorobenzene in place of derris) and in Switzerland from 65.2 per cent. in 1946 to 1.85 per cent. and 4 warbles per beast in 1953. The most spectacular attack on the problem took place in Belgium where in 1955 the simultaneous double-dressing of all the cattle in the country was ordered.

In all these countries control is state-aided and supplies of parasiticides (mostly derris) are distributed free. In Great Britain warble fly infestation has been declared a scheduled disease, but infestation remains high. No practical scheme of eradication has yet been found to satisfy all the prevailing conditions. A trial scheme aimed at assessing some of the difficulties has been running on the Isle of Wight for the past 2 years and would appear to be proving successful as judged by the falling incidence from 16.0 per cent. with 10 to 20 larvae per beast in 1954 to 1.9 per cent. with less than 3 larvae per beast in 1956, although the final assessment, it is claimed, must wait for another 2 years.

Research on the problem aims at investigating 3 theoretical possibilities of breaking the life cycle of the fly: (1) by preventing oviposition or penetration of larvae using the latest insecticides. None appear to be successful to date but hope is held out for them

(*Concluded at foot of col. 1, page 973*)

Current Literature

BOOK REVIEWS

Symposium of Tuberculosis. Edited by F. R. G. HEAF. Pp. 721. London: Cassell and Company, Limited, London. 1957. Price 5 guineas.

As might be expected from the title this is a massive work. There are 14 contributors including the editor who himself contributes three of the 13 chapters.

The greater part of the work is devoted to a consideration of tuberculosis in the human subject and the introduction of a chapter entitled "Tuberculosis of Animals" mainly serves to emphasise the importance of tuberculosis in animals as a source of infection for human beings and also pinpoints the progress that has been made in the eradication of bovine tuberculosis.

Intended primarily for the student of human medicine, whether undergraduate or post-graduate, this massive tome contains much of interest to the veterinary surgeon who is interested in the whole problem of tuberculosis. As the foreword says the drab dullness of uniformity has been avoided in so far as the contributors have been encouraged to state their own views and so it has not been possible to eliminate conflicting opinions though their existence may well provoke informative discussion.

The chapter entitled "Tuberculosis in Animals" is the work of Professor John Francis; this chapter extends to 40 pages. Naturally the greater part of the chapter (27 pages) is devoted to bovine tuberculosis. The veterinary surgeon will find this an interesting review of the subject of bovine tuberculosis and the veterinary student will profit by reading it. The section on bovine tuberculosis must serve a useful purpose in providing a concise and informative review for the medical graduate and undergraduate. The non-veterinary reader may find some difficulty in understanding that part of the text dealing with the interpretation of the single intradermal comparative tuberculin test as used in Great Britain.

There is one minor contradiction in this section. On page 297 it is stated that "In Great Britain the first legislative attempt to control bovine tuberculosis was the Tuberculosis Order of *1915* which was not put into force until 1925." On page 300 it is stated "In *1909* the first Tuberculosis Order was introduced . . . , but was suspended on the outbreak of war in 1914" and again on page 301 "The Order (*of 1909*) was suspended during the war so the position was unsatisfactory until it was re-introduced in 1925."

The remainder of the chapter is devoted to tuberculosis in animals other than man. This part of the chapter is less satisfactory than that dealing with bovine tuberculosis and suffers from an attempt to describe too much in too small a space. Some of the statements made seem to be based on somewhat flimsy grounds. Thus in the portion dealing with dogs on page 308 there is the statement, "Short-nosed breeds such as fox-terriers appear to be more susceptible than others, and males are more commonly affected than females." It may be that the description of a fox-terrier as a short-nosed breed is an undetected error, but in the writer's experience there are no grounds for stating that short-nosed breeds are more susceptible. The statement that males are more commonly affected than females cannot be accepted without adequate evidence that it is not due to the preponderance of male dogs kept as household pets.

Two important points in regard to canine tuberculosis receive no mention. First, how common it is to find that the dog appears to have acquired infection from a known case of human tuberculosis in the household. And second, the potential risk of a dog infected with the human type of tubercle bacillus serving as a source of infection to human beings especially children in the household.

Under cats on page 309 no mention is made in the remarkable reduction of feline tuberculosis in urban communities that has followed the introduction of either tubercle-free or pasteurised milk.

In spite of these and other shortcomings the chapter on "Tuberculosis of Animals" has merit as a contribution to the literature of comparative medicine.

Principles of Animal Virology. By F. M. BURNET (Director, The Walter & Eliza Hall Institute of Medical Research, Melbourne, Australia). Pp. x + 486. New York: Academic Press Inc. $10.00.

The title of this book leads the reader to expect something in the nature of a text-book whereas it is an account of the author's current outlook towards the central problems of virology, especially those in which he is particularly interested. Its chief merit rests in the rather defined, almost prophetic, views of the author in realms which are only beginning to be explored and in the skill with which he has woven them into a comprehensive whole. Few workers commit to paper their current provisional outlooks and this undue reticence is a real loss to their colleagues. Nevertheless, since the pronouncements of the eminent are apt to be taken as given *ex cathedra*, authors should be most careful to adopt a title and style for writings of a speculative and personal character which can leave the reader in no doubt of their nature. This book could be misleading. The inclusion of the eclipse phase of virus growth into the definition of viruses might lead the unwary to suppose that the eclipse phase had as secure an experimental foundation as the small size and intracellular multiplication of virus particles. The author rejects the hypothesis that the persistence of antibody in animals

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Abstract.—*Concluded.*

in the form of a lacquer preparation; (2) by destruction of migrating larvae (which has included unsuccessful vaccination); and (3) by treatment of the larvae on the back as at present—the only effective insecticide to date being derris scrubbed into the skin. Investigation of the reported value of phenothiazine treatment in the control of warble fly does not substantiate the claim. It would appear, however, that a promising drug is being investigated in Germany.

The author points out that owing to the inability to breed Hypoderma species in the laboratory, carefully controlled experiments have hitherto been difficult if not impossible, but that this failure is now being overcome and should hasten research work on this important problem. W. T. R.

recovered from virus diseases is due to persistence of virus in them. He may be right but it would still seem to be a very open question. He accepts the Laidlaw-Green hypothesis that viruses are descended from micro-organisms by evolution towards increasing dependence upon the metabolism of the host cell. However, as he notes, most virologists accept this hypothesis without enthusiasm and their apathy may well be due to doubt of the value of so wide an hypothesis until more is known about the relationship of animal viruses amongst themselves and their relationship to plant, insect and bacterial viruses. Viruses might easily contain classes of basically different constitution with wholly different origins and in this case undue emphasis of hypotheses which unite them might hinder advancement of knowledge.

The book is somewhat marred by irritating factual errors of a minor kind. For example, J. T. Edwards adapted rinderpest virus to rabbits long before Baker did so, egg-adapted rinderpest virus is not extensively used as vaccine, dog distemper was first adapted to grow in eggs and used for immunising dogs by Haig, not by Cabasso & Cox. Here one gets the impression that too exclusive reliance has been placed upon American scientific references. Too much use is made of virologists' laboratory jargon and some words are unnecessarily overworked, like "virtually" for "mostly." Typographical mistakes are frequent. Nevertheless, the book is interesting and stimulating, surely the chief requirements for a book of this kind, and, moreover, it brings together useful information not commonly quoted by scientific writers. There are ample references.

Trace Elements in Human and Animal Nutrition. By E. J. UNDERWOOD. Academic Books, Ltd. Pp. 429, 47 tables, 29 figs. London and New York, 1956.

If anyone were still in doubt as to the present position of nutrition generally and of animal nutrition in particular, this book should convince him. The days of sweet simplicity are gone. It may well be that they never existed and that, in fact, their contemplation in 1957 is but one of the many contemporary types of nostalgia. Most definitely that kind of nutritional experiment, theoretically simple but very often extremely difficult from a technical point of view, in which an animal species—most commonly the rat—was examined with respect to its ability to live and thrive on a diet lacking one of the chemical elements, has lost much of its point. It was never a very practical proposition where large animals are concerned.

In round terms we are now some 50 years since studies of the vitamins really commenced to make headway : it is a little less than that since the nutritional incompatibility of calcium and phosphorus first began to appear and to foreshadow some of those inter-relationships between the inorganic elements which are now known to exist. If any hint were needed of the rate at which knowledge accumulates it is provided by the fact that this book, so recently published and so up to date (with a host of references from 1954, for example), contains no reference to the influence of the zinc content of the ration on the health of pigs ; for the many papers which have now been published have appeared within a space of little more than a year.

Nevertheless, this book, which its author rightly claims as being the first in its specialised field, is a very valuable one and should be read—and possessed !—by all those who are concerned with animal feeding. A successful monograph of this kind usually requires that its author should have been engaged in the field during a period of some years, that the subject matter should be up to date and well documented, and that the material should be presented clearly, simply and logically. Whilst Dr. Underwood would not claim to have worked with all of the 18 elements dealt with in his book, his practical experience with some of them has enabled him to survey the field lucidly and fully.

After a brief, largely historical introduction to the subject, the author devotes separate chapters to iron, copper, molybdenum, cobalt, nickel, zinc, manganese, iodine, fluorine and selenium. In his 12th chapter, an "orphan family" consisting of aluminium, arsenic, barium, boron, silicon, strontium and vanadium, is reviewed, whilst the final section is devoted to soil-plant-animal relationships.

In each case the development of the subject is logical. A historical survey opens the chapter, to be followed by accounts of the distribution of the element in foods and tissues. Absorption and excretion are then usually dealt with, followed by an estimate of the requirements of the different species and usually ending with a discussion of toxicity.

There are numerous tables and figures. Most of the latter are reasonably competent but by now the reviewer no longer expects in any reasonably priced book to find first-rate pictures of livestock showing pathological conditions. In the present case Fig. 9 is rather poor. The solution to this kind of purely technical problem may be the substitution of line drawings for photographs. Certainly in this book, Fig. 19, which is a line drawing, seems more useful than Fig. 9.

An author index (21 pp.) and subject index (11 pp.) complete the volume, each chapter of which ends with a long list of references to original work. There is every indication that atomic fission has revived scientific interest in the inorganic elements and that work on these substances is likely to be enormously increased in the next decade. For that reason, and for those already listed, this book is a valuable source of information on the present stage of our knowledge of the trace elements.

The Uniqueness of the Individual. By P. B. MEDAWAR, F.R.S. Pp. 185. Methuen & Co., Ltd., Strand, London, 1957. 18s.

This book, by the Jodrell Professor of Zoology and Comparative Anatomy in the University of London, is a collection of 8 essays, all of which have already been published during the last 10 years in various journals. Broadly, they deal with the problem of evolution from the standpoint of modern experimental biology.

The first two essays are concerned with the problem of old age and natural death. Here, the author emphasises that the process of senescence begins at birth and can be protracted only by lowering the rate of living or stretching out the whole life span, rather than adding a

(*Concluded opposite*)

Opening of New I.C.I. Research Laboratories

The opening of these laboratories on October 1st, by the Viscount Waverley, in the presence of 300 distinguished guests, marked the 21st anniversary of the entry of I.C.I. into the medical and veterinary pharmaceutical field. Set in 350 acres of parkland, and overlooking Radnor Mere, the buildings continue the Company's policy of " Industry in Arcady " —good surroundings as aids to good work.

The laboratories encompass the disciplines and equipment essential to the discovery, evaluation, and development of chemotherapeutic compounds, and were first planned in 1947. By the foresight of Dr. H. C. Carrington and Dr. J. Yule Bogue, a veterinarian and a Director of the Company's pharmaceuticals division, the great advances in design and chemical and biological techniques developed during the following 10 years at home and abroad have been included to make these research laboratories the most modern of their kind.

Influenza depleted the expected number of guests, but those present included: Professor W. I. B. Beveridge; Mr. E. R. Callender, senior vice-President of the B.V.A.; Mr. G. N. Gould, President of the R.C.V.S.; Professor H. D. Kay; Mr. R. S. Marshall; Professor C. W. Ottaway; Professor L. P. Pugh; Professor W. L. Weipers; and Dr. W. R. Wooldridge, scientific director of the Animal Health Trust.

THE NEW I.C.I. RESEARCH LABORATORIES.

few years at any one point. Senility is considered as an artefact of domestication. A third essay consists of a note on scientific method. This is followed by a commentary on Lamarckism in which the case for and against his evolutionary teachings are analysed with care. The fifth essay, " The Pattern of Organic Growth and Transformation," is concerned with problems of relative growth. He points out that change of size is almost always accompanied by transformation, growth by proportionate enlargement being rare. The fourth essay draws attention to the imperfections that have accompanied the great developmentary advances that have arisen in man during his evolutionary period. The examples of imperfection discussed are haemolytic disease of the newborn, man's upright carriage and the ineptitude of wound healing in the human skin. The idea that tradition plays an important part in the development of man forms the subject of the seventh essay, while the last chapter deals with the uniqueness of the individual.

This book is extremely stimulating but it demands contemplation and thought for full appreciation.

THE HUSBANDRY AND DISEASES OF CALVES

This new handbook, produced by the Association's Technical Development Committee, was published at the end of August. Every member of the B.V.A. should have received a copy by post not later than the end of the first week of September. Several readers have complained that their copies still have not arrived and it would be of great help if everyone who has not yet received a copy of the publication would be good enough to send a postcard addressed to the Editor of THE VETERINARY RECORD.

News and Comment

DOMESTIC ANIMALS AND HUMAN DISEASE

The President of the Royal College of Veterinary Surgeons, Mr. G. N. Gould, has been asked to preside as Chairman at the lecture on "Domestic Animals and Human Disease" to be given at 3.30 p.m. on Wednesday, October 30th, in the Lecture Hall of the Royal Institute of Public Health and Hygiene, 28, Portland Place, London, W.1, by Professor T. H. Davey, O.B.E., M.D., D.T.M. Professor Davey holds the Chair of Tropical Hygiene in the School of Tropical Medicine of Liverpool University. All members of the veterinary profession and other interested persons are invited to attend the lecture.

R.C.V.S. AWARDS

Fellowships

The Diploma of Fellowship by examination has been awarded to two candidates: Dr. Frederick Rowland Bell, his thesis being entitled *Observations on Rumination and its Neural Control*, and Mr. John Alexander Taylor, for his *Regional and Applied Anatomy of the Head and Neck of the Domestic Animals.*

Fitzwygram Prize

The Fitzwygram Prize, for members who graduated in the year 1956, has been awarded to Mr. Mark Henry Fussell, B.A., VET.M.B.(CANTAB.), M.R.C.V.S., for an essay, *Anaesthesia in Veterinary Practice.* This is the first time that a veterinary graduate of the University of Cambridge has been awarded this prize.

Williams, Walley and Lawson Prize

The Williams, Walley and Lawson Prize, for members who graduated in the year 1956, has been awarded to Mr. Michael Mervyn Whitmore, B.SC. (EDIN.), M.R.C.V.S., for an essay on the same subject.

MAJOR A. C. DUNCAN

Friends of Major Duncan will be interested to know that after 52 years' service to agriculture and animal health, as Professor of Veterinary Science in the Royal Agricultural College, he is now retiring.

The Royal Agricultural College has had many famous teachers but none has done more than Major Duncan to uphold all that is best in life. He is blessed with many talents, and in spite of the serious handicap of deafness, he has kept a wonderful philosophy of life and had the satisfaction of earning the respect and love of College students both past and present, and of the teaching staff and agriculturists.

To mention but a few of Major Duncan's accomplishments, it is interesting to know that he was trained as an artist, studying with Sir William Orpen in Dublin. Later he became a gold medallist in veterinary surgery and medicine, and a research worker with Professor Mettam at the Dublin Veterinary College. There he did original work on the relationship of human and bovine tuberculosis, and was awarded his Fellowship Diploma for his thesis on this subject.

A lover of horses and an accomplished horseman, Major Duncan was for many years Veterinary Major in the Gloucestershire Yeomanry.

In the 1914-18 war, as Deputy Director of Veterinary Services in the Egyptian Expeditionary Force Major Duncan was largely responsible for controlling the serious losses in horses and mules from anthrax, and in settling many difficult problems between the Arabs and the Jews. This task he accomplished after learning Arabic and becoming the personal friend of both Lawrence of Arabia and General Allenby.

After the First World War, as a side line, Major Duncan studied law and was called to the Bar. Bristol University conferred upon Major Duncan the Degree of Bachelor of Science.

A wise, humorous, kind, and very humble man, it is appropriate that now that Major Duncan is retiring, after being a member of the staff of the College for over a third of the time of the College's existence, his services should be recognised. Mr. Cadogan Cowper, R.A., has been commissioned to paint his portrait. Major Duncan's friends, students (past and present), and colleagues on the staff are given the opportunity of subscribing towards the painting. Subscriptions should be sent to: "Major Duncan's Portrait Fund," Royal Agricultural College, Cirencester, Glos.

THE CENTRAL VETERINARY SOCIETY

At a meeting of the Central Veterinary Society to be held at the Royal Veterinary College, Camden Town, N.W.1, on November 7th, Mr. Charles Dow, B.V.M.S., M.R.C.V.S., of the University of Glasgow Veterinary School, will be giving a paper on "The Pyometra Complex." He will be discussing some important aspects of this disease in relation to his own work, and Fellows of the Society and other veterinary surgeons who are interested in small-animal problems are invited to attend the meeting which commences at 6 p.m.

UNIVERSITY NEWS

Edinburgh

The undermentioned candidates have passed the Third Professional Examination (Part I) in Veterinary Pharmacology for the degree of Bachelor of Veterinary Medicine and Surgery:—

Allsup, Thomas N., Davies, David W., Harris, Grenville W., Henry, Robert R., Hunt, George E., James, William T., Ker, John, Lake, David E., Logan, Ernest F., Lovett, Charles I., Seymour, Stanley, Swift, Thomas, and Wahler, Saw.

The undermentioned candidates have passed the Final Professional Examination (Part I) in the subject of Veterinary Hygiene for the B.V.M. & S. degree:—

Elliot, Jean, Fraser, Daniel M., Hudson, Geoffrey B., Jackson, Jane M. T., Mitchell, Benjamin, Montgomery, John F., Rennie, Lessel J. C., Rogers, Elizabeth M., Smith, Ian G. N., Thomson, James W., and White, Roy O.

The undermentioned candidates have passed the subject of Physics of the First Professional Examination:—

Adams, Jean R., Bailey, Sheila A., Bell, Alastair F., Carwardine, Paul C., Davies, Lewis D., Foggie, Janet, Forgrave, Bryan T. G., Hargreaves, Charles E., Paterson, Robin J., Pearson, Clifford, and Robertson, John F.

The undermentioned candidates have passed the subject of Chemistry of the First Professional Examination:—

Grant, Kathleen A., MacIntyre, Gerald C., Paterson, Robin J., Robertson, Harvey Y., and Robertson, John F.

The undermentioned candidates have passed the subject of Zoology of the First Professional Examination:—

Bailey, Sheila, A., Forgrave, Bryan T. G., Hargreaves, Charles E., Millar, Thomas I., Morgan, John R. G., Robertson, John F., and Williamson, Alexander M.

The undernoted candidate has passed the Examinations for the Diploma in Veterinary State Medicine:—

Dickson, James, M.R.C.V.S.

Mr. T. G. HEATLEY, O.B.E.

Professor McCunn writes:—

Thomas George Heatley died in hospital on Tuesday, October 1st, 1957. He was 87 years of age. He retired from practice about 10 years ago and up till quite recently he enjoyed good health and was seen frequently about the town doing the "shopping chores." He had been in the East Suffolk Hospital for a few weeks only and it is good to know that this bright and active man was not confined to his bed for long.

Heatley was born at Hartford in Cheshire in the year 1870. He showed a desire to become a veterinary surgeon and, encouraged by his mother, he spent a few months with Mr. Roberts, a veterinary surgeon in Wrexham. This whetted his appetite still more and in 1889 he entered the Royal "Dick" College. At that time the course was one of 3 years. He had a very creditable academic career, he was a medallist, was awarded the "Dick" Bursary, and secured first place in the Fitzwygram prize in 1892. He graduated M.R.C.V.S. in May, 1892. Mr. Roberts invited him to join the practice in Wrexham but he declined this offer in favour of a post at Hollesley Bay Agricultural College. He was appointed Professor of Veterinary Medicine at that Institution. He held the post until January, 1896, when he settled in Woodbridge, Suffolk, and began to build up a practice on his own account.

He enjoyed his years at Hollesley for he liked his contacts with the students and he had plenty of time to indulge in his favourite recreations of hunting, sailing, and fishing. He soon found that by taking his classes before breakfast and after dinner he had ample time to indulge in these sports and this idea met with a ready acceptance from his students!

The practice at Woodbridge prospered for he was an exceptionally capable veterinary surgeon and he was prepared to give service. Although it was always a single-handed practice it became one of the best in East Anglia and Heatley was held in respect and renown not only by the public but also by the members of his own profession. His name on a certificate of soundness was a hallmark.

During the First World War, in 1915, and at the age of 45, he joined the Army Veterinary Service. Within 3 months he was serving in France. He was invalided from France with trench nephritis. After 6 months' illness, he recovered and served thereafter in England. He served at several stations and eventually became O.C. of the large Veterinary Hospital at Gosforth, Northumberland. In 1918 he opened No. 12 Reserve Veterinary Hospital at York. He was awarded the O.B.E. for his war services. This patriotic war service by a man who could have remained at home and with honour was a gesture typical of George Heatley.

When he returned from the Forces he had the job of rebuilding his practice and this he accomplished so well that it was soon as good as ever. Even in his old age he remained active and energetic and he was always an inquisitive student searching for further knowledge. He was a very able surgeon and like his famous contemporary Dick Hudson he could fashion his own tools when necessary. He earned and held the respect and admiration of his fellows and by his competence and conduct he did much to place veterinary science on a higher plane.

George Heatley gave much to his profession; his colleagues have lost a dear friend and teacher, for even the briefest contact with this man was never without profit.

★

Mr. Raymond Keer, Secretary of the Suffolk Horse Society, writes:—

Major T. G. Heatley took a very keen interest in the Suffolk Horse, and by his death the Suffolk Horse Society has lost a good friend and adviser. He acted for many years as the Society's veterinary inspector of unregistered Suffolk mares and their female progeny. He was particularly interested in the quality of the feet and was an enthusiastic supporter of the classes for the "best feet" at the Society's shows. He was always ready and willing to give freely of his sound knowledge and advice.

R.C.V.S. OBITUARY

We record with regret the deaths of the following members of the profession:—

HEATLEY, Thomas George, O.B.E., M.R.C.V.S., Marton Place, Woodbridge, Suffolk, Major late R.A.V.C. Qualified May 30th, 1892, at the Royal (Dick) Veterinary College, Edinburgh. Died October 1st, 1957, aged 87 years.

HUDSON, Edward Arthur, Barrow, Nr. Bury St. Edmunds, Suffolk. Qualified July 11th, 1899, at the Royal Veterinary College, London. Died October 5th, 1957, aged 81 years.

SMITH, William Caulfield, Townsend House, Townsend Road, Minehead, Somerset. Qualified December 15th, 1924, at the Glasgow Veterinary College. Died September 13th, 1957.

PERSONAL

Births

ANDERSON.—On October 1st, 1957, to Jean, wife of A. C. Anderson, M.R.C.V.S., of "Forglen Villa," Queen Street, Huntly, a daughter, Jane Cunningham.

BLACK.—On September 27th, 1957, to Beryl (*née* Ricketts) and Archibald Black, M'S.R.C.V.S., at 204, London Road, Portsmouth, a son, Angus McColl, brother for Heather.

ROBERTSON.—On September 19th, 1957, to Margaret, wife of Alastair G. Robertson, M.R.C.V.S., of 47, Louisville Avenue, Aberdeen, a son.

STONE.—On September 19th, 1957, at Redruth Hospital, Cornwall, to Helen, wife of M. W. Stone, B.SC., M.R.C.V.S., a son, David Michael Raymond, a brother for Janet.

Marriages

COUTTS—GREEN.—At Craiglochart Parish Church, Edinburgh, on September 28th, 1957, by The Rev. George G. Campbell, M.A., Kenneth Coutts, B.SC., M.R.C.V.S., son of Mr. and Mrs. H. Coutts, III, Hilton Street, Aberdeen, to Dorothy Patricia, daughter of Mrs. E. G. Green, 50, Elliot Road, Edinburgh, 11.

WHITTLESTONE—PEDERSEN.—On August 3rd, 1957, at Norre Alslev Church, Denmark, Peter Whittlestone, M.A., B.SC., M.R.C.V.S., of Cambridge, to Inga Pedersen of Norre Alslev, Falster, Denmark.

Sir Richard Haddon, C.B.E., has accepted the invitation of the Minister of Agriculture to act as his honorary adviser on farming publicity following the winding up of the Ministry's Publicity Working Party, of which he was Chairman.

THE ESSEX VETERINARY SOCIETY

On Thursday, October 3rd, a highly successful joint meeting was held at the Shire Hall, Chelmsford, Essex, between the Essex Veterinary Society and the Essex Branch of the Corn and Agricultural Merchants Association.

The Chair was taken by Col. C. A. Brooks, J.P., who was supported on the platform by Mr. A. D. Self, M.R.C.V.S. (President, Essex Veterinary Society), Mr. S. Robson (Chairman, Essex Branch of Corn and Agricultural Merchants), Mr. C. J. Godfrey (Secretary, Essex Branch of Corn and Agricultural Merchants), and Mr. Roger Massey, M.R.C.V.S. (Secretary, Essex Veterinary Society).

The speakers were Mr. J. K. D. Dow, Nutritional Adviser, Unilever Ltd., on "Problems Common to Veterinary Surgeons and Feeding-stuffs Manufacturers," and Dr. H. Williams-Smith of the Animal Health Trust Farm Livestock Research Station who spoke on "Antibiotic Food Supplements." The meeting was attended by 120 members of both societies.

The meeting was preceded by an informal dinner at the Saracen's Head Hotel, Chelmsford. Representing the Feeding-stuffs Manufacturers were Col. C. A. Brooks, and Messrs A. W. Brown, G. B. Arnold, S. A. Price, Norman Pine (Chairman of the National Association), Col. John Cramphorn (Vice-President of the National Association), Messrs. C. G. Metson (Secretary of the National Association), C. J. Godfrey, and S. Robson. Representing the profession were Messrs. A. D. Self, J. K. D. Dow, Dr. W. R. Wooldridge, Messrs. Edward Wilkinson, A. J. Wright, and Roger Massey.

The meeting was a great success and helped substantially towards furthering friendly relationship between the profession and the feeding-stuffs manufacturers and merchants in Essex.

COMING EVENTS

October

15th (Tues.). Meeting of the British Small-Animal Veterinary Association, North Eastern Division, in the White Horse Hotel, Darlington, 8 p.m.

16th (Wed.). Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at the Society's House, 5 p.m.
Evening Meeting of the Dumfries and Galloway Division at the Crown and Mitre Hotel, Carlisle, 7.30 p.m.
Meeting of the Southern Counties Veterinary Society at the Royal Bath Hotel, Bournemouth, 7.30 p.m.

17th (Thurs.). Ordinary General Meeting of the South-Eastern Veterinary Association at the Royal Star Hotel, Maidstone, 2.30 p.m.
Annual Dinner and Dance of the Yorkshire Veterinary Society at the Cairn Hydro, Ripon Road, Harrogate, 7.30 p.m.
Meeting of the British Small-Animal Veterinary Association at the Queens Hotel, City Road, Chester, 8.30 p.m.

18th (Fri.). Annual Dinner Dance of the South Wales Division at the Seabank Hotel, Porthcawl.
General Meeting of the Mid-West Veterinary Association at the Berkeley Café, Clifton, 2.30 p.m.

23rd (Wed.). Meeting of the R.A.V.C. Division at the Royal Veterinary College, London, N.W.1, 2.15 p.m.

25th (Fri.). General Meeting of the Yorkshire Veterinary Society in the Hotel Metropole, Leeds.
Meeting of the Society for the Study of Animal Breeding at the Royal Veterinary College, Camden Town, N.W.1, 11.30 a.m.

November

1st (Fri.). Annual Dinner Dance of the North Wales Division at the Imperial Hotel, Llandudno.

6th (Wed.). Meeting of the Midland Counties Division at the Regent Hotel, Leamington Spa, 2.30 p.m.

7th (Thurs.). General Meeting of the Central Veterinary Society at the Royal Veterinary College, Camden Town, N.W.1, 5.30 p.m.

14th (Thurs.). Annual Dinner and Dance of the Victoria Veterinary Benevolent Fund in the Northern Hotel, Aberdeen, 7.30 p.m.

29th (Fri.). Golden Jubilee Dance of the North of Ireland Veterinary Association at the Grand Central Hotel.

BRITISH VETERINARY ASSOCIATION QUARTERLY MEETINGS IN LONDON

Wednesday, November 13th, at No. 7, Mansfield Street.

10.30 a.m. Small-Animals Committee.
2.00 p.m. Parliamentary and Public Relations Committee.
4.00 p.m. Home Appointments Committee.

Thursday, November 14th, at No. 7 Mansfield Street.

10.00 a.m. Veterinary State Medicine Committee.
11.30 a.m. Farm Livestock Committee.
12 noon Finance Sub-Committee.
2.15 p.m. General Purposes and Finance Committee.

Friday, November 15th, at the Connaught Rooms—

10.30 a.m. Meeting of Council.

FOWL PEST

The fowl pest situation in parts of Lancashire has again deteriorated. During the last few weeks outbreaks have been confirmed in parts of the county outside the area at present subject to Infected Area restrictions under the Fowl Pest (Infected Area Restrictions) Order, 1956 (M.A.F.F. 332/57).

To limit the spread of the disease from these outbreaks, it is necessary to extend the Infected Area to the north to include the County Borough of Blackpool, the Boroughs of Fleetwood and Lytham St. Anne's, the Petty Sessional Division of Fylde and the Parish of Lea; and to the east to include the Borough of Chorley, the Petty Sessional Division of Walton le Dale and the remainder of the Petty Sessional Divisions of Leyland and Leyland Hundred.

The County Borough of Southport is being excluded from the Infected Area as there have been no recent outbreaks of fowl pest in the Borough.

The necessary amendment Order has been made and came into operation on October 7th, 1957.

FOOT-AND-MOUTH DISEASE

The areas described in the schedule below are declared to be Infected Areas for the purpose of preventing the spread of foot-and-mouth disease:—

IN THE COUNTY OF SOMERSET

The City of Wells.

The Petty Sessional Division of Kilmersdon.

In the Petty Sessional Division of Frome: The parishes of Tellisford, Lullington, Buckland Dinham, Mells, Elm, Leigh-on-Mendip, Whatley and Frome and so much of the parishes of Selwood, Nunney, Trudoxhill and Wanstrow as lies to the west of the main road running from Trowbridge *via* Beckington, Frome and Wanstrow to Bruton, including the said road.

In the Petty Sessional Division of Shepton Mallet: The parishes of Emborough, Binegar, Ashwick, Stoke St. Michael, Croscombe, Downhead, Cranmore, Doulting, Shepton Mallet, Pilton, Pylle, Evercreech and Batcombe.

In the Petty Sessional Division of Wells City and County: The parishes of Chewton Mendip, Priddy, Rodney Stoke, Westbury, St. Cuthbert Out, Wookey, Dinder and North Wootton.

In the Petty Sessional Division of Temple Cloud: The parishes of Chew Magna, Chew Stoke, Nempnett Thrubwell, Stowley-Sutton, Ubley, Compton Martin, West Harptree, East Harptree, Cameley, Hinton Blewett, Litton, Farrington Gurney and Ston Easton.

In the Petty Sessional Division of Long Ashton: The parishes of Dundry and Winford.

In the Petty Sessional Division of Axbridge: The parishes of Butcombe, Burrington and Blagdon, so much of the parish of Wrington as lies to the east of the main road (A38) running from Bristol to Churchill, including the said road, and so much of the parish of Cheddar as lies to the north and east of the main road (A371) running from Wells to Axbridge, including the said road.

IN THE COUNTY OF CORNWALL

The Boroughs of Liskeard, Saltash, Lostwithiel and Fowey.

The Petty Sessional Divisions of Liskerrett and East South.

In the Petty Sessional Division of East Middle: The parishes of St. Ive, Quethiock, St. Mellion, Pillaton, South Hill, so much of the parish of Callington as lies to the west and south of the main road (A388) running from St. Mellion *via* Callington and Kellybray to Launceston, including the said road, and so much of the parish of Linkinhorne as lies to the south and west of the road (B3257) running from Bray Shop to Coade's Green, excluding the said road.

In the Petty Sessional Division of East North: The parish of Altarnum and so much of the parish of North Hill as lies to the south and west of the road (B3257) running from Bray Shop *via* Coade's Green to Example Cross, excluding the said road.

In the Petty Sessional Division of Lesnewth: The parishes of Advent, St. Clether and so much of the parish of Davidstow as lies to the south and east of the main road (A39) running from Camelford to Stratton, excluding the said road.

In the Petty Sessional Division of Bodmin and Trigg: The parishes of St. Breward, Blisland and Cardinham.

In the Petty Sessional Division of Powder Tywardreath: The parishes of Lanlivery, St. Sampson and Tywardreath.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Ayrshire. Low Greenbank Farm, Darvel (Oct. 4).
Derbys. Ivy House Farm, Sawley, Long Eaton (Oct. 2).
Dorset. Mill Farm, Chetnole, Sherborne (Oct. 2).
Lanarks. Covington Mains, Covington, Thankerton (Oct. 3).
Lancs. Red Lees Farm, Tockholes, Dawen (Oct. 4).
Staffs. Chase View Farm, Abbots Bromley, Rugeley (Oct. 4).

Foot-and-Mouth Disease

Cornwall. The Glebe Farm, Duloe, Liskeard; Well Town Meadows, Duloe, Liskeard (Oct. 6).
Cumberland. Sooty Hill Farm, Ousby, Penrith (Oct. 1); Dolphenby Farm, Edenhall, Penrith (Oct. 5); Farmanby, Langwathby, Penrith (Oct. 6).
Somerset. Manor Farm, Ston Euston, Bath (Oct. 4).

Fowl Pest

Kent. 6, Upper Bridge Street, Wye, Ashford (Oct. 2); Slotendane Farm, Margate (Oct. 5).
Lancs. High Cop Farm, Brindle, Chorley; Slack Farm, Brindle, Chorley; 308, Chapel Lane, Coppull, Chorley (Oct. 1); 35, Moor Road, Croston, Preston; Newlands Poultry Farm, Mains Lane, Little Singleton, Blackpool (Oct. 2); North View, High Barn Lane, New Longton, Preston; Brookly, Gill Lane, Longton, Preston (Oct. 4); Moss House Lane, Much Hoole, Preston; Chornley Fold Farm, Bamber Bridge, Preston; Burnside, Newton, Kirkham, Preston; Crookings Farm, Crookings Lane, Penwortham, Preston; Banks Farm, Station Road, Little Hoole, Preston (Oct. 5).
Lincs. The Chestnuts Farm, Wigtoft, Boston (Oct. 5).
Norfolk. Chalk Hall Farm, Hockwold, Thetford (Oct. 3).

Swine Fever

Bristol. Home Farm, Backwell Hill, West Town (Oct. 2).
Flints. Clwydd Pig Farm, Rhuddlan, Rhyl (Oct. 4).
Hants. Barnetts End Farm, Barnetts Wood, Bighton, Alresford (Oct. 3).
Norfolk. Hill Farm, Westwick, Norwich; Crossways Farm, Skayton, Norwich (Oct. 3); Beck Hythe, Little Melton, Norwich (Oct. 4).
Staffs. 36, Burnt Tree, Tipton (Oct. 1); 11, Baker Street, West Bromwich (Oct. 2); Greensforge, Kingswinford, Brierley Hill (Oct. 4).
Warwicks. Moorbans, Lutterworth, Rugby (Oct. 3).
Worcs. Roadside, Brockhill, Norton; Alkaline Battery Allotments, Union Street, Redditch (Oct. 2).
Yorks. Highstone Smallholding, Worsborough Common, Barnsley (Oct. 4).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

The " Rights " of Animals

Sir,—It appears to me that the argument set out in Mr. Thornton's letter in THE VETERINARY RECORD of September 28th provides the basis of a consistent attitude towards animals. In contrast, the views put forward in the letters which appeared in the issue of October 5th seem to lead to absurdities.

All three of the latter agree in according rights to animals, and Mr. Smythe even goes so far as to consider that " animals have the same rights as we have." Probably all these writers were thinking chiefly of domestic animals but the kingdom of sentient creatures contains many species. Are we to accord rights equal to those of dogs or horses to flies, mosquitoes, and garden worms? If to do so seems too absurd, we could perhaps argue that the rights of animals are proportional to their " intelligence " but we would then find that our defence of the rights of animals has destroyed human rights, notably those of the insane and simple minded who lack intelligence. Since we eat sheep, on what grounds shall we condemn the eating of imbecile children?

Major Hume suggests that " we get the notion of right and wrong from our conscience, which prescribes duties, and rights belong to anybody to whom duties are owed.". It is true that in any practical situation conscience tells us what we ought to do and that the good life consists in following conscience. Nevertheless, conscience cannot infallibly prescribe duties and thereby give rights, because the dictates of conscience vary in time and place, even in the same person. Thus, one man may in conscience feel that he has duties towards animals, another may feel that he has duties towards God in respect of animals, and a third may feel that he has no duties at all towards animals. The question at issue is which man is right? It is no answer for anybody to say that according to his conscience animals have rights or have not rights. No doubt British law on this question is an attempt to reconcile the conflicting views of the majority groups within the State and is irrelevant to the argument.

If animals have rights, another difficulty arises. Men have rights and in consequence no man ought to impose his will on his neighbour. If animals have rights, by what right do we make them serve us, even to the point of eating them? Mr. Smythe writes, " We hold no sovereignty over them, other than that we have established by our superior craft and cunning." Does he mean that might is right?

Yours faithfully,
A. W. GLEDHILL.

Fir Island,
The Ridgeway,
Mill Hill,
London, N.W.7.

October 5th, 1957.

Sir,—Mr. Hugh Thornton's letter on the " rights " of animals deals with questions of prime importance, which have exercised the greatest minds since the beginning of history. For this reason, I hope that abler pens than mine will accept the challenge of a philosophical discussion, but for fear they do not, may I be allowed to enter the lists against the views of St. Thomas Aquinas?

It has always seemed to me that Aquinas plays the game of philosophy by a double standard—heads I win, tails you lose. If he can find apparently rational arguments for some parts of the faith, so much the better; if he cannot, he need only fall back on revelation.

Before we brand as sentimentalists all those who believe that the " brute creation " has certain rights, let us remember that Aquinas—and presumably all his followers—held that no man can enter heaven unless he has been baptised, as is revealed in John III, 5. So far as salvation is concerned that seems to lump together a fair proportion of the human race with the animals—" the brutes that perish."

During the eventful century that has elapsed since the publication of Darwin's " Origin of Species," and later, J. H. Huxley's " Man's Place in Nature," all the intellectual battles concerning man's physical nature have gone decisively in favour of those who believe that he differs in degree, but not in kind, from other living things. The whole science of biology with all its various branches is founded on this fact.

Comparative psychology supports the view that man's spiritual life is also natural, and not supernatural.

It is amusing when Mr. Thornton states that we cannot assess how animals feel and experience, because—" of this we can have no direct knowledge." At the same time he claims direct knowledge of the eternal mystery—the nature of reality.

There can be no conflict between true science and true religion, because both are vitally interested in the truth, and the enemy of both is obscurantist dogma. I believe that there is a greater truth embodied in Dr. Albert Schweizer's precept, " Reverence for Life," than there is in Thomas Aquinas's dogma, " Animals have no rights."

Yours faithfully,
F. B. EDWARDS.

Newgate,
Llanbrynmair,
Mont.

September 28th, 1957.

Aphosphorosis and Infertility

Sir,—I was very interested in the letter from Messrs. Mullins and Ramsey in THE VETERINARY RECORD of September 28th concerning the lack of infertility in a herd showing acute aphosphorosis.

Recently I investigated the cause of " Pica " and obscure lameness as shown by several cows in a Guernsey herd in Suffolk.

Clinical investigation and blood analyses carried out in April confirmed a tentative diagnosis of aphosphorosis. Phosphorus blood levels varied from 1.0

to 2.0 mg. Inorganic P. per 100 ml. with an average of 1.4 mg. Inorganic P. per cent. Calcium levels averaged 11.0 mg. per cent. serum. Despite these low inorganic phosphorus levels, the conception rate during May to July inclusive was very satisfactory, although no attempt had been made in the interim period to correct the phosphorus deficiency.

These observations would suggest that other factors may be involved in those herd infertility problems that are attributed solely to abnormal Ca:P ratios.

Yours faithfully,
J. R. LLOYD.

"Vermont,"
Elveden,
Thetford,
Norfolk.
October 3rd, 1957.

A Student's Experiences in the U.S.A.

Sir,—I think that my experiences, as a student, seeing practice in the United States may be of interest to members of the profession.

I first spent 6 weeks as an "intern" student at Syracuse, N.Y., with 2 brothers who had recently built a small animal hospital of about 50 cages. This new hospital contained an excellent operating theatre, X-ray room, pharmacy, and examining and treatment rooms. I was required to assist in the treatment and care of the animals, and also to assist in surgery. In this way I was able to see and do a large amount of work which otherwise I could not have done until I was qualified.

The American veterinary student usually does a summer as an intern, both to gain experience and money, since these are paid jobs.

After my time at Syracuse, I travelled on to Chicago, to Dr. Riser. He is an eminent veterinary pathologist, and also Secretary of the American Small-Animals Association. I was very glad to be allowed to work with him. Here there was an older hospital of 120 cages, yet with all the modern equipment. Besides the normal small-animal practice, in which he is aided by 2 assistants, Dr. Riser carries out some researches in the pathological cases and specimens he obtains in the practice.

Miami was my next stop, and here, despite the pull of the beach, I was privileged to see the hospital of the Drs. Knowles. This is a large, modern, 150-cage hospital, with a superb surgery, piped oxygen in every room, and music in the wards.

This practice largely caters for a specific clientele to whom expense is of no importance, and who require the best for their pet animals. In addition to the general running of the hospital, a great deal of research is carried out in new surgical methods and new drugs. Both the Drs. Knowles are well known in America for their work.

I spent a further 2 days with a veterinarian before leaving America, in Jacksonville, Fla. He pointed out to me one particular aspect of veterinary medicine in America. In this town there are 11 small-animal hospitals. Three of these belong to young veterinarians who had previously worked for him as assistants, and then set up on their own in the same town.

The small-animal field in America has great potential, and a good return. The veterinarian has a doctor's degree, and therefore seems to enjoy a position more in keeping with his professional ability than is seen in Britain. Another thing I noticed was that every veterinarian I visited was either doing some research, or was planning to return to College for another degree. There was co-operation with the medical profession over many points, for example the discussion of X-rays with a hospital radiologist.

After a memorable visit, I bring away with me the thoughts of the modern hospitals and methods used. I felt that the life of the American veterinarian is more comfortable than that of his colleagues in this country.

Yours faithfully,
A. J. BACON.

School of Veterinary Medicine,
Madingley Road,
Cambridge.
October 5th, 1957.

Lapinised Rinderpest Virus

Sir,—A report is in preparation to show that after repeated passage lapinised rinderpest virus appears to suffer a change in virulence for rabbits. The temperature response to intravenous injection of virulent blood is delayed approximately 12 hours—from the evening of second day to the morning of third day—the peak temperature often does not reach 106° F. and never reaches 107° F., the characteristic drop in temperature seldom occurs on the morning of the fourth day but may occur by the fifth day if the rabbit is not killed for harvesting, and the *post-mortem* lesions, while present, are less well defined.

Field reactions in cattle appear to be unchanged. In one case immunity apparently failed to develop but this may have been due to faulty technique at the time of immunisation.

Yours faithfully,
R. G. MARES.

Department of Animal Health,
Coastal Veterinary Section,
P.O. Box 538,
Accra.
October 1st, 1957.

Failure to Develop Immunity

Sir,—It was heartening to read of the completion of the Brucellosis experiment at Compton, and the profession is very much indebted to all the workers concerned in this painstaking piece of research. It places on record for all time the known efficacy of Strain 19 vaccine for normal herds, and I hope this will now pave the way for further work on a different aspect of the problem.

In certain parts of the country clinicians find that some herds seem unable to develop the immunity normally expected of a vaccinated animal. When all allowances are made for accidental omissions, poor records, mishandling of the vaccine, and unreasonably heavy challenges on the farm, there remains a hard core of accumulated evidence that is difficult to explain.

My own hypothesis, at the moment, is that certain

diets predispose to infection, particularly genital infection, by causing abnormalities of the endocrine system which act either on the genitalia directly or on the immunity mechanisms. Moustgaard and his co-workers in Denmark have shown that with pigs a sub-optimal intake of pyridoxine results in decreased protein retention and a lowered content of " euglobulin " in the blood. I am not suggesting that this is necessarily true of cattle, but I give it as an instance of proven facts which might, in one species, influence the ability to develop immunity.

Veterinary surgeons in practice are well aware that the spread of many diseases within herds does vary from farm to farm and from year to year, and in many cases it is not possible to cite factors in the management that would account for this. In the past we have tended to assume that infections were of varying virulence, but the experience at Compton with strains from " breakdowns " shows that this is not always the case. I have known cases where the empirical use of mineral supplements in the treatment of ovarian dysfunction has been followed by a reduced incidence of minor infections such as foul of the foot, while some research workers have found it far more difficult to infect animals on some premises than on others when working with such organisms as *Strep. agalactiae*, and *Trichomonas foetus*. These examples prove nothing, but cumulatively they do suggest that there are other factors involved besides mechanical contact with virulent organisms in the incidence of infective disease.

To elucidate these problems some very precise long-term investigations will be necessary, with close collaboration between biochemists, physiologists, and clinical workers. It is to be hoped that the completion of such work as the Compton Brucellosis experiment will result in a determined attack on these more complicated issues, which may prove to be almost equally important in the maintenance of health.

Yours faithfully,
CONNIE M. FORD.

Ministry of Agriculture,
Veterinary Investigation Centre,
School of Agriculture,
Sutton Bonington,
Loughborough,
Leicestershire.
October 1st, 1957.

Should we Investigate " The Box " ?

Sir,—I have read with interest the article from " Nature " and the correspondence upon " the Box " in recent editions of THE VETERINARY RECORD. The " Oxford Box " may be similar to those tested in Holland; but I feel it should be put to the proof before it is condemned out of hand.

I cannot help being impressed by the number of highly intelligent people in this district who consider that there is something in it, and there are one or two features that have come to my notice that would warrant an investigation. It is tempting to scoff, but incredulity proves nothing. It should be a simple matter to settle the question once and for all.

If the Oxford " apparatus " is different from the rest, then let us know about it; but if it all adds up to nothing, then the public should be informed. The longer it goes on without some conclusion being reached, the more harm will be done.

Yours faithfully,
H. A. CRAWSHAW.

37, St. John's Road,
Newbury.
October 7th, 1957.

Sir,—If any veterinary surgeons in practice can give me their experiences of " the Box," I shall correlate all the evidence for some future action.

Yours faithfully,
G. M. G. OLIVER,
Hon. Secretary.

Society of Practising Veterinary Surgeons,
" Ashfield,"
Lanchester,
Co. Durham.
October 7th, 1957.

Mastitis

Sir,—Soon to appear in the *American Journal of Veterinary Research* are two papers by the Swedish workers, Ullberg, Hansson and Funke, on the distribution in sound and mastitic udders of S35-labelled penicillin, illustrated by sectional autoradiographs, which I suggest are worth a special effort to see by those interested.

It has been suggested that failure of mastitis cases to respond to intramammary treatment is due either to the use of the wrong antibiotic or to " resistant " pathogens, and we are aware that the percentage of such cases is increasing. These papers confirm what many have long suspected, namely, that some types of mammary infection, by reason of the tissue pathology peculiar to them, rapidly become physically inaccessible to any treatment *via* the milk or the blood. This does not mean that we should not continue to improve our antibiotics and their formulations for those cases of mastitis to which they are legitimately applicable, usually a question of timing; but it does mean that we must expect this unresponsive percentage to increase as the types more sensitive to treatment are progressively controlled.

It follows therefore that elimination of mastitis from our dairy herds cannot be achieved by the intramammary tube, no matter what antibiotic or other medicament it may contain now or in the future. Control of the spread of mastitis within the herd; culling of " chronics " and the most careful bacteriological examination in quarantine of new entries, remain the only means—slow and hard though they may be—of reaching this end.

Yours faithfully,
G. V. SHORT,
Veterinary Department.

Imperial Chemical Industries Limited,
Pharmaceuticals Division,
Fulshaw Hall,
Wilmslow,
Cheshire.
October 7th, 1957.